

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. I. This sheet of drawing replaces the original sheet of drawing of Fig. 1. In Fig 1, previously omitted hatching has been added.

remarks

STATUS OF CLAIMS

In response to the Office Action dated October 26, 2007, claim 1 has been amended, claims 2-16 have been canceled, and claims 17-35 have been added. Claims 1 and 17-35 are now pending in this application. No new matter has been added.

DRAWING CORRECTION

The drawings have been objected to as Fig. 1 does not show parts in section hatched.

By this response, a replacement sheet of drawing has been submitted for Fig. I. In Fig. 1, previously omitted hatching has been added.

OBJECTION TO THE DISCLOSURE

The disclosure has been objected to having a minor informality. The Examiner notes that in paragraph [0040], "steal" should be "steel".

By this response paragraph [0040] has been amended to change "steal" to "steel". Therefore, withdrawal of the objection to the disclosure is respectfully solicited.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1-16 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite and as being incomplete for omitting a pump structure.

The rejection is moot as to canceled claims 2-16. Independent claim 1 has been amended so as to recite a pump structure, as well as to recite the invention with the degree of precision and particularity required by the statute. Therefore, it is respectfully urged that the rejection be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 103

I. Claims 1-3, 7-9 and 13-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nguyen et al. (USPN 6,558,139 in view of Ooitsu et al. (US 2003/0063825).

The rejection is moot as to canceled claims 2, 3, 7-9 and 13-16.

Independent claim 1 has been amended to delineate:

A pump carrying supercritical CO₂ fluid or liquid CO₂, comprising:
a canned motor which rotary drives an impeller mounted on one end of
a main shaft of the canned motor working simultaneously with the main shaft;
and

bearings which support the main shaft of the canned motor, wherein
the pump carries the supercritical CO₂ fluid or the liquid CO₂ by rotary
driving of the impeller,

each of the bearings is a ball bearing of which an inner ring, an outer
ring and balls are made of ceramic material, and

the main shaft is hollow so that a deformation of the main shaft
expands inward.

Neither Nguyen et al. nor Ooitsu et al. disclose, *inter alia*, a canned motor having a main shaft with an impeller mounted on one end thereof and the canned motor working simultaneously with the main shaft of the canned motor. It should be noted that in Nguyen et al., shaft 14 (Fig. 1) is not a main shaft of a canned motor or of motor 61 that drives shaft 14 via drive shaft 58. Thus, amended independent claim 1 is patentable over Nguyen et al. and Ooitsu et al.

II. Claims 4-6 and 1012 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Nguyen et al. in view of Ooitsu et al., as applied to claims 1-3, and further in view of Sugimori et al. (US 2003/0077015).

The rejections are moot as to canceled claims 4-6 and 10-12.

III. NEW CLAIMS

New claims 17-35 are submitted. New dependent claim 17 delineates:

The pump according to claim 1, further comprising:
a manifold having a suction port through which the supercritical CO₂ fluid or the liquid CO₂ is suctioned and a discharge port through which the supercritical CO₂ fluid or the liquid CO₂ is discharged,
a discharge/suction-side casing which forms a space with the manifold, the space is a part of a passage connecting the suction port with the discharge port,
a purging-side casing having a purging port through which some of the supercritical CO₂ fluid or the liquid CO₂ is discharged, and
an outer cylinder being held between the discharge/suction-side casing and the purging-side casing and inside of which the canned motor is installed, wherein
one of the bearings is an angular ball bearing installed on the discharge/suction-side casing and another of the bearings is an angular ball bearing installed on the purging-side casing, and

the canned motor has a stator and a rotor installed on the main shaft, and both ends of the main shaft are rotatably supported by the angular ball bearings.

Neither Nguyen et al., Ooitsu et al. nor Sugimori et al. discloses the additional features recited in new claim 17. Therefore, claim 17 is patentable over Nguyen et al., Ooitsu et al. and Sugimori et al. for reasons in addition to the fact that it depends from amended independent claim 1.

It should be noted that the subject matter of claims 31-35 is supported by paragraph [0005] of the present application.

Claims 18-35 depend directly or indirectly from amended independent claim 1. Therefore, claim 18-35 are patentable over Nguyen et al., Ooitsu et al. and Sugimori et al.

IV. In view of the above, the allowance of amended independent claim 1, as well as of new claims 17-35, is respectfully solicited.

CONCLUSION

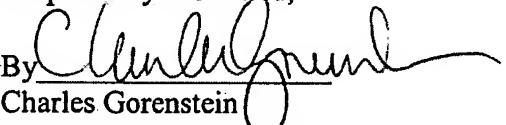
In view of the above, applicant(s) believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Edward J. Wise (Reg. No. 34,523) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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Attachments